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ABSTRACT

The Multiple Versions Forum was convened to arrive at a consensus on various aspects of constructing bibliographic records for items that are the same in content but differ in physical representation. The 33 forum participants--representing backgrounds in network systems, national libraries, archives, cataloging systems, USMARC, AACR2 (Anglo-American Cataloging Rules, second edition), microforms, preservation, serials, and special materials--offered varying perspectives to the discussion. The forum focused on identifying and evaluating solutions for the USMARC record-based communications environment. After introductory remarks, the forum began with two framework presentations. The first treated the definition and scope of the multiple versions questions, and the second surveyed the characteristics of various automated environments in which bibliographic data are currently manipulated. From discussions following these presentations, forum participants developed a set of seven working assumptions and a set of nine evaluation criteria for techniques that would be discussed. Following the framework sessions, three basic techniques for handling multiple versions were examined in detail: (1) composite; (2) two-tier and three-tier hierarchical; and (3) separate. Of the options considered, the two-tier hierarchical model was considered the most viable for preservation microform versions. Various aspects of the discussion of the Forum participants on the selected model are presented in six sections, and appended materials include descriptions of the other types of models considered as well as a list of participants and an agenda for the meeting. (SD)

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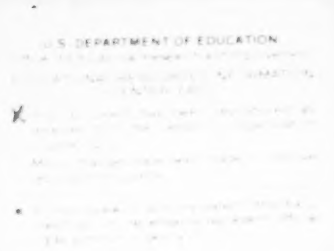

Multiple Versions Forum Report

Report from a Meeting held
December 1989
Airlie, Virginia

Network Development and MARC Standards Office
Library of Congress ▪ 1990

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1

Overview of the Forum

Sally McCallum

Setting

The Multiple Versions Forum was convened on December 5-8, 1989, at Airlie, Virginia, to arrive at a consensus on various aspects of constructing bibliographic records for items that are the same in content but differ in physical representation. This report describes the agenda of the Forum, the technique endorsed and statements of benefits, and possible changes needed in either USMARC or cataloging conventions. Appendixes C, D, and E review techniques discussed and discarded.

The Forum was supported by the Council on Library Resources through a grant to the Library of Congress, which assumed planning responsibilities. While the multiple versions problem had been under intense discussion over the last few years because of new initiatives to coordinate and increase the production of preservation microforms, timely encouragement for the Forum came from the Policy Committee of the CONSER program.

The Forum participants were selected to represent different backgrounds in order to bring a variety of perspectives to the discussion: local systems, network systems, national libraries, archives, cataloging systems, USMARC, AACR 2, microforms, preservation, serials, special materials, etc. (See List of Participants, Appendix A.)

Framework

The Forum focused on identifying and evaluating various solutions for the USMARC record-based communications environment, recognizing that the network and local systems environments are highly sensitive to the communications format. The impact of the communications decision on end users, both library staff and library users, was also considered at relevant points.

After introductory remarks, the Forum began with two framework presentations. The first treated the definition and scope of the multiple versions question. The second surveyed the characteristics of the various automated environments in which bibliographic data are currently manipulated: local internal, network internal, and communications.

From discussion following these presentations, the Forum participants developed a set of working assumptions which broadly circumscribed the task of the Forum.

Working Assumptions

- Technique is for the communications environment.
  The forum is to make recommendations concerning the communication of multiple version information between systems, not necessarily within systems.

- Technique is for long-range implementation with near-term implementation considerations.
  The forum is to consider a technique for the future and not be unduly constrained by current implementations and systems.

- Changes to cataloging rules and USMARC formats are possible, if needed.

- Technique is to be defined in general terms; details and implementation are to be worked out following the Forum.

- "Multiple versions" encompasses the basic "equivalent" versions that are reproductions or items that have minor physical variations or are issued in different physical formats.

- It is not essential to identify a single technique that can accommodate all types of versions.

- "System-neutral" environment.
  The Forum is to assume internal systems will reconfigure to internal requirements the records communicated to them using the technique.

In addition a set of evaluation criteria for techniques that would be discussed was developed. These criteria included questions involving use of the technique in non-communications environments.

Technique Evaluation Criteria

1. Potential for effective end user access
2. Potential for effective library staff use
3. Potential for effective use in various environments
4. Potential for effective use for various functions
5. Potential for use for different material types
6. Implications for efficient creation and maintenance of records
7. Cost effectiveness over the total system and for the component parts of the system for creating, providing, and presenting data
8. Feasibility for implementation in context of existing databases
9. Extent to which records are self-defining (stand-alone)

Discussion of Techniques

Following the framework sessions, three basic techniques for handling multiple versions were examined in detail:

Composite - carrying descriptions of multiple versions in one record.

Hierarchical - carrying descriptions of multiple versions in partial records that are bibliographically dependent on a separate full bibliographic record.

Separate - carrying descriptions of multiple versions in separate, bibliographically independent records that are linked.

The treatment of each technique began with a description of the technique and one or more possible models using the technique. The descriptive presentation was followed by two position presentations: one favoring the technique and the other opposing it. Presenters for this part of the meeting were not necessarily supporters of the technique or position they explored but fulfilled their assignment in order to stimulate a complete discussion. (See Appendix B for listing of discussion leaders.)

Following the examination of the techniques, the Forum participants focused the discussion on one type of multiple "equivalent" version: preservation microform master and service copy versions that are made of original print material, both monographic and serial.

Having rejected the composite record technique (see Appendix C for a description of the composite record models and possible uses), the Forum explored the following three models in subgroup discussion:

Two-tier - a hierarchical model in which a master record may have holdings records that contain version information linked to it.

Three-tier - a hierarchical model in which a generic description of a work may have linked to it records containing version specific information, and these version records may have holdings records (without version information) linked to them.

Separate - the separate record model in which all records for versions are independent with links among them, and are capable of being communicated alone.

Each subgroup discussed in depth one of these three models concentrating on preservation microform versions. The models were studied against the evaluation criteria developed earlier. (See Appendixes D and E for a description and evaluation of the three-tier and separate record models.)

Conclusion

In the subgroup discussions only one model held up well to the evaluation criteria, the two-tier approach. The subgroups reported to the whole Forum where the discussion strongly supported the two-tier model as the most viable one for preservation microform versions.

The Forum discussed the two-tier approach and concluded it would be the best technique for all equivalent versions. The definition of "equivalent" for the different forms of material must, however, be more precisely defined by specialists who handle the material.

The following sections report on various aspects of the discussion of the Forum participants regarding the selected two-tier hierarchical model.

II

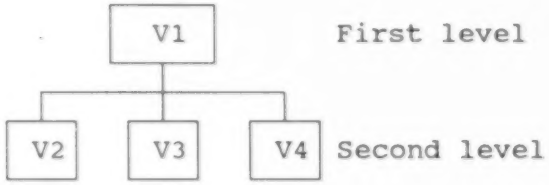
Two-Tier Hierarchical Model for Multiple Versions

Sally McCallum and Ben Tucker

DESCRIPTION OF THE MODEL

Conceptual Model

The two-tiered hierarchical model for the transmission of multiple versions records between systems has the following characteristics. The model is hierarchical with an independent bibliographic record for one version of an item at the top of the hierarchy (first level) and dependent partial records at the second level, each linked to the bibliographic record. The following diagram illustrates these relationships with records for four versions of an item: V1, V2, V3, and V4.



The independent bibliographic record describes one version of an item. The description may be detailed or minimal, but it is complete in the sense that the record can be used alone to identify an item. The dependent second level records represent equivalent versions of the bibliographic item described in the first level record. Each second level records contains data pertaining to the version that are different from that contained in the first level record, e.g., different imprint information, or that apply only to the version, e.g., a series in which only the version is issued. In the first case the version data "replaces" the data in the first level record; in the second, it augments it. The versions described at the second level are completely described only when data from the first and second levels are appropriately combined.

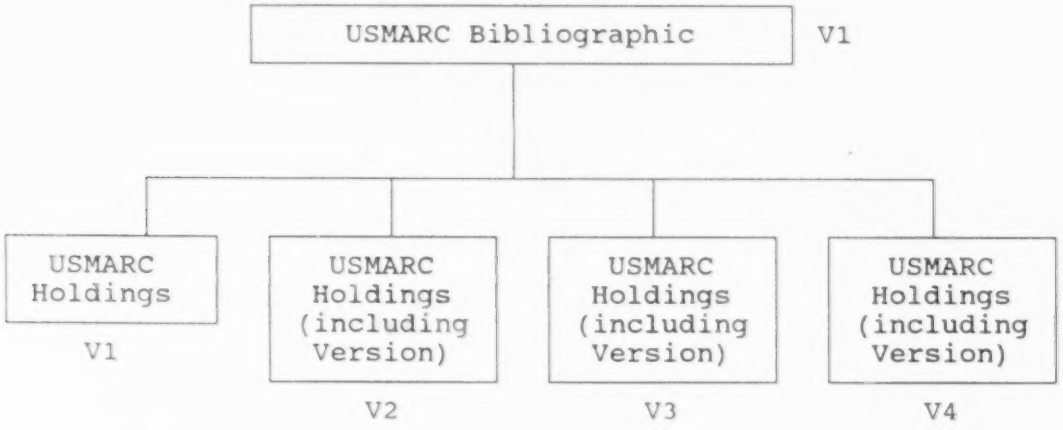
Because the model is intended to apply to equivalent versions (see discussion below), guidelines are needed to indicate which version should be described in the first level and which are to be equivalent versions described in the second level of the hierarchy. The terminology first and second are used in the model (and this document) to indicate the hierarchy and interdependence of the machine records, not to indicate a ranking of the versions. In the case of time-separated versions, such as a printed book and subsequent microfilm, the earliest version is usually described at the first level. In the case of simultaneously published items, such as simultaneously published audio cassette and compact disc, either version would be a candidate for description on the first level.

Each version record, at the first or second level, may contain holdings data as well as bibliographic data.

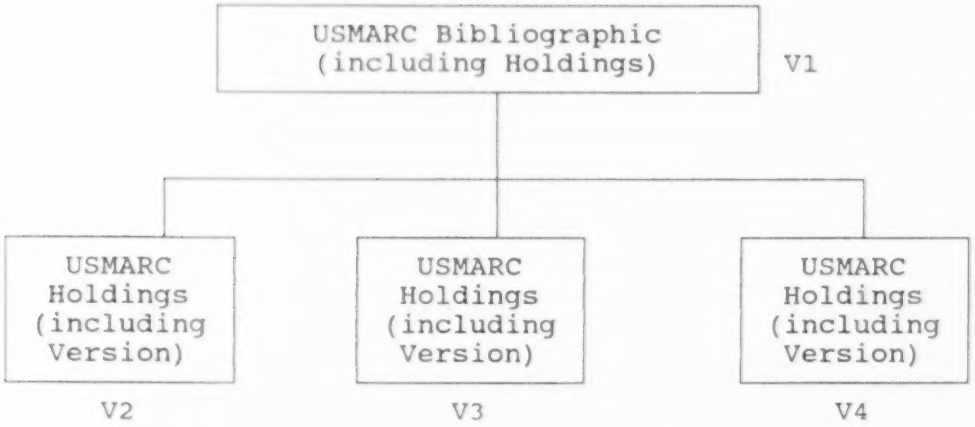
Implementation of the Model Using USMARC

The two tiers of the model are composed of a USMARC bibliographic records at the first level and USMARC holdings records at the second level. The bibliographic record contains a stand-alone bibliographic description of an item, including physical description. (The holdings information for the first level version of the item may be embedded in the bibliographic record or given in a linked holdings record.) Each second level holdings record for another version contains bibliographic information that pertains only to that version. This bibliographic information in the holdings record for another version does not repeat any information in the first level bibliographic record, but replaces or augments information at the first level. (The holdings record also contains holdings information for the version.) The hierarchy of records would be one of the following general models.

- holdings for the version described in the bibliographic record are in a separate holdings record:



- holdings for the version described in the bibliographic record are embedded in that record:



The following example illustrates the configuration shown in the second model, where the holdings for the first level bibliographic version are embedded in the bibliographic record. These holdings could have resided in a separate holdings record. The example shows records for a journal item for which parts of the original print version are held and parts of a microfilm version are held. (The holdings in these records are fictitious.)

Bibliographic record for the journal in print form, containing also the holdings of v. 107 and current issues of the print copy (841-863):

```
LDR *****nasbbb22*****bbb4500
001 12345678
005 19890515112153.0
008 76803c19769999nyusnbpbbbbbbbbb|uuu|0engbd
010 bb‡abbbb76645271
022 0b‡a0363-0277‡y0000-0027
040 bb‡aNSDP‡cDLC‡dDLC
042 bb‡ansdp‡alc
043 bb‡an-us---
050 0b‡aZ671‡b.L7
082 bb‡a020/.5
222 10‡aLibrary journal‡b(1976)
245 00‡aLibrary journal.
260 00‡a[New York :‡bBowker]
300 bb‡av.‡bill.‡c29 cm.
362 0b‡a v. 101, no. 9-  May 1, 1976-
650 b0‡aLibrary science‡xPeriodicals
650 b0‡aLibraries‡zUnited States
780 00‡tLJ, Library journal‡x0360-3113

841 bb‡aybbb‡b8312284pbbbbb4l1y0bbbbbaeng0831017‡e4
852 01‡aDLC‡hZ671‡i.L7
853 00‡61‡av.‡bno.‡i(year)‡j(week)
863 30‡61.1‡a107‡i1982
```

Holdings/version record for the microform version of the above journal, indicating a link to the bibliographic record (004), coded data for the microfilm version (007), and imprint and collation of the microfilm version (843), as well as holdings of v. 108-114 of the microfilm (852-863):

```
LDR *****nybbbb22*****4bbb4500
001 000001
004 12345678
007 hduafb---baca
008 7902024pbbbbbb8bbbb2001uueng0900106
843 bb‡aMicrofilm‡bWashington, D.C. :‡cLibrary of Congress, Photoduplication
      Service.‡e7 microfilm reels ; 35 mm.
852 4b‡aDLC‡bMicRR‡jMicrofilm 03608
853 00‡61‡av.‡bno.‡i(year)‡j(week)
863 30‡61.1‡a108-114‡i1983-1989
```

APPLICABILITY: "EQUIVALENT" VERSIONS

Because most previous discussions about multiple versions have tended to stall at the point of defining the term "multiple version," it should be emphasized that the Forum adopted an essentially problem-solving mode, instead of a purely theoretical approach, and in this way quickly reached the conclusion that the technique or techniques it endorsed would have applicability primarily to certain types of materials that have presented librarians and library users with problems regarding multiple versions. These materials are several kinds of "equivalent" versions, in all of which the content is a repetition of the intellectual or artistic content of the item copied, e.g., copies made for preservation. To distinguish such copies from other versions, they have been called "equivalent" versions by Tillett. Specific examples of "equivalent" versions in the print category are the following:

- Print copies in macroform by the publisher of that edition of the book (as in the case of reprints for stock, without revisions).

- Microreproductions of books and serials, made for preservation or other purposes, without any change in the content.

For the print category of library materials (books, etc.), the materials meant to be *excluded* by this term are all those that would be normally called "other editions" (revisions, updatings, expansions, translations, adaptations, modifications, etc.) and those monographic publications that are referred to often as "reprints by a different publisher."

The Forum also discussed the applicability of the "equivalent" version concept to non-print materials. To a degree, non-print is not different from print material. For example, for reasons of preservation, sound recordings on 78-rpm phonograph records are being transferred to tape by archives of sound recordings. For preservation or other purposes, it is also possible to copy the photographic images of slides, filmstrips, and photographs onto video tape. Television works can also be copied onto video tape. These and other non-print materials, to the extent that they provide copies of the originals, seem to be logically and easily handled by the technique the Forum worked out for "equivalent" versions.

Sometimes non-print versions represent alternative formats of the title, as issued simultaneously by the publisher, and while the content is the same from version to version in the various formats, it is more questionable here whether the technique should be applied to them. Some examples are sound recordings on long-playing phonograph records and on compact discs, and videorecordings in Beta and VHS formats. For these and comparable cases, a good argument could be made for continuing to use separate records for each version, because of the differences in the bibliographic data required for the items. The Forum participants concluded that in this latter case, specialists in each non-print area should examine the possibilities for treatment as "equivalent" versions in their media and establish guidelines.

III

Evaluation of Two-Tier Hierarchical Model

A.R. Pierce and Betsy Humphreys

The two-tier hierarchical model was evaluated during the Forum using the criteria establish by the Forum participants:

1. Potential for Effective End User Access

End users will search and retrieve a single bibliographic record which will eliminate the confusion brought about by having multiple instances of "near-match-but-somehow-different" records. Version data can be displayed in a clear and unambiguous manner because the salient data about each version is concentrated in each of the attached USMARC holdings records.

2. Potential for Effective Library Staff Use

Library staff members engaged in any activity that requires searching of large cooperative databases will also benefit from a reduction in the number of near-match-but-somehow-different bibliographic records that must be reviewed. Other potential impacts on specific library functions include:

Preservation: Significant data is carried in the unique 007 and 843 fields in each holdings record. It is feasible for a variety of systems to report preservation data in a concise and unambiguous manner drawing on these fields.

Interlibrary Loan: Again, the ability to scan holdings records under a single bibliographic record would allow requesting libraries to locate available material more easily.

Acquisitions: Data will have to be assembled from a bibliographic and a holdings record if a library wishes to order a version other than the one represented in the single bibliographic record.

Cataloging: If local systems wish to establish separate bibliographic records for each version, data from the bibliographic record and appropriate linked holdings records, will have to be combined.

3. Potential for Effective Use in Various Environments

The two-tier model is similar to the way several local systems process their data internally and this good fit should allow effective implementation on local systems. The networks will probably need to make significant internal changes and will have to provide new displays.

4. Potential for Effective Use for Various Functions

Covered in points 1 and 2 above.

5. Potential for Use for Different Material Types

The model appears to be applicable to "equivalent" versions, regardless of media or whether they are serials or monographs. The two-tier model does not apply to different editions. Some specific cases of this exclusion are revisions, adaptations, updates, translations.

6. Implications for Efficient Creation and Maintenance of Records

As the basic bibliographic information for the work and the corresponding access points are stored in a single bibliographic record, the creation of records for other versions requires input of only a small number of fields in a holdings record. The number of maintenance transactions is also reduced substantially because the most frequently updated bibliographic data about a work (e.g., access points, and for serials, continuation notes) appear only in the bibliographic record.

7. Cost Effectiveness of the Total System and for the Component Parts of the System for Creating, Providing, and Preserving Data

The two-tier model provides the best method for creating data. An investment will have to be made in all systems to implement the two-tier model. This may be viewed as an investment in future processing.

There will be fewer bibliographic records because there will be more version-describing holdings records. Because holdings records are shorter than bibliographic records and contain few elements that are likely to be updated, some savings in the amount of data transmitted and stored, at all levels, may be expected.

Note that for any system planning to implement the USMARC Format for Holdings Data, implementation of the the two-tier model for equivalent versions represents an incremental cost.

8. Feasibility for Implementation in Context of Existing Databases

The two-tier model will be easy to implement in the many local systems which parallel in their internal organization a division into bibliographic and holdings data. Because the two-tier technique requires no changes to the USMARC Format for Bibliographic Data, data in the two-tier model should easily co-exist with any separate bibliographic records already created for different versions.

9. Extent to which Records are Self-defining (Stand-alone)

Version holdings records are not self-sufficient; to be meaningful and useful they must be displayed in combination with information from the bibliographic record to which they are linked.

IV

Effect of the Two-Tier Hierarchical Model on Current Systems

The Forum participants did not take current systems as a limiting constraint when considering the techniques and models, although it was recognized that experience unavoidably affected opinions. Several participants were asked during the wrap-up to comment on the possible impact of the two-tier approach on current systems. These statements were necessarily general and preliminary in nature but give an indication of problems, paths, and opportunities.

LÓCAL SYSTEMS (Susan Rhee)

A number of points need to be considered which will assist in reducing costs that may be associated with full implementation of the two-tier approach for some local systems.

1. *Common strategies.* In the local system environment there are many different system configurations and designs. Independent systems will bear the whole cost. Institutions with turnkey systems will be dependent on vendors. Institutions with commonly held systems with technical variations, such as NOTIS systems, could share techniques and software.

2. *Timetable.* The timetable for national implementation will be very important for local development. It will impact the existing priority order for system enhancements, a priority list that includes other desirable features for local systems such as format integration, linked authorities, OSI/LSP, distributed systems, intelligent workstations for end users, and gateway services. It may impact other programs as well since all operations and services compete with all others.

3. *Holdings standardization.* An earlier implementation of the USMARC holdings format may ease record exchange problems that currently exist among local systems with differing conventions for transferring holdings.

4. *Machine conversion.* The current internal local system policies for reproductions differ. Machine conversion of local databases will be needed to normalize these differences. Some institutions currently use separate records, which may need to be merged and transformed to bibliographic and holdings records. Some have amalgamated records that will need to be pulled apart so that current 007's, 533's, and holdings strings are matched in holdings records. In both cases coordination will be needed with the bibliographic utilities to assure that the network records and holdings are accurate.

5. *Synchronization.* Implementations by the various bibliographic systems – utilities, local systems, union databases – need to be synchronized as much as possible to avoid maintaining multiple import/export programs.

6. *USMARC holdings format stability.* As long as the USMARC Format for Holdings Data is a draft and under revision, it is a moving target for implementers.

7. *Needs.* Time and cost assessments, both individual and collective, are needed, as are technical feasibility studies.

OCLC SERVICES AND PRODUCTS (Glenn Patton)

A preliminary assessment of the effects of utilizing USMARC holdings records to contain version information reveals that the development effort involved would be no greater than that which is anticipated for a full implementation of the USMARC holdings format, except for the development of capabilities to display information about the availability of microform masters in search displays and to use information in the holdings record as a part of the searching process. Since, as a result of other major developments required for the New Online System and for format integration, it will be some time before the full USMARC Format for Holdings Data can be implemented in the OCLC Online System, OCLC staff will, over the next few months, evaluate potential ways in which OCLC's established Local Data Record structure might be extended to provide an interim capability to record version information. This evaluation process will also include a fuller examination of the effects on various offline products, such as catalog cards and Union List products, as well as effects on bibliographic record exchanges, cooperative projects such as the Major Microform Projects, and tapeloading services.

HARVARD UNIVERSITY (Dale Flecker)

HOLLIS, Harvard's local system, supports the USMARC holdings format. It also now commonly merges records for separate versions (particularly for preservation microfilms and for serial runs composed of multiple physical formats) into a single record in the HOLLIS database. When it merges versions, holdings records are used to store such version-specific data as the 007 and 533 fields. Harvard has therefore already largely implemented the techniques recommended by this meeting.

NOTIS Systems, Inc. has announced that support of the USMARC holdings format will be available in the NOTIS system (on which HOLLIS is based) in the near future. Based on Harvard's experience, it seems likely that the recommended approach for multiple versions will work well in NOTIS, and that libraries using NOTIS will soon be in a position to support the holdings record technique.

Many other vendors of local systems have been slow to adopt the USMARC holdings format, input and output of which will be required by the Forum's recommendation. One of the things which would greatly speed the development of such support by system vendors would be an announcement by OCLC of a date on which they will begin including holdings records in "archive" and "export" files. The loading of OCLC data is in general a basic requirement for commercial library systems, and OCLC can be very influential in that market by taking an aggressive stand on the support of the holdings format.

RESEARCH LIBRARIES INFORMATION NETWORK (RLIN) (Kathleen Bales)

Research Libraries Group (RLG) staff are scheduled to begin the analysis tasks for implementing the USMARC Format for Holdings Data during the second quarter of 1990. The recommendation to communicate information for reproductions in USMARC holdings records will add some additional considerations to this work, but the effort will be incremental. The additional issues include preservation and copy cataloging functions, as well as considerations for displaying data to end users of the database.

Display of preservation microform master information will be created from a greater variety of fields in the stored record; the functionality of RLG's pioneering work in this area will be retained, while aligning this work with national standards.

For copy cataloging and acquisitions, version information will need to be available for creation of full bibliographic records. Design decisions need to be made concerning the storage of the data.

Displaying version information for end users in a clear and unambiguous manner will dictate a redesign of current RLIN displays and therefore has implications for work being done by RLG's Public Services Committee.

UNIVERSITY OF WISCONSIN-MADISON NETWORK LIBRARY SYSTEM (Nolan Pope)

The proposed use of a hierarchical record structure for handling multiple versions or works will not require major changes to the local system used at the University of Wisconsin (UW)-Madison. To some extent, this is already being done. An official movement by the library community to this approach would simplify efforts for handling other types of multiple version works which UW-Madison has been considering. This change affects local systems in three main areas: loading/entering of data, display of data, and indexing for retrieval.

The Network Library System (NLS) at the UW-Madison is a locally developed online catalog. It is linked to the NOTIS system which provides automated database maintenance/editing, circulation, acquisitions, fund accounting, and serials control. Authority processing, which includes flipping of invalid headings, is accomplished as the data moves from the NOTIS system to the NLS.

The NLS currently uses a hierarchical approach for support of some multiple version works. This particularly true for print and microform copies of the same work. The 007 and local notes relevant only to that copy are moved to the holdings record which is subordinate to the bibliographic record. The 533 publication information is moved to the 843 field. Video film and computer software are currently being studies with the expectation of using a hierarchical approach there also.

The public display includes notes in the bibliographic portion of the record, but they are "labeled" with the location where that copy resides when they come from a holdings record. Format information is displayed with the copy level information.

The load programs which process OCLC tapes move appropriate fields of separate single bibliographic records to the holdings records, based on local revisions to the NOTIS software for that support. For records keyed into the local system, staff enter appropriate fields in both bibliographic and holdings records. Loading of hierarchical records which contain multiple versions will require changes for duplicate detection and record update processing when wishing to modify an existing record or add another copy/version. The ability to indicate which version(s) are needed when selecting a record from a bibliographic utility database will greatly facilitate this processing and eliminate the need for complex coding of local processing instructions in local fields (such as the 910).

Indexing of records in NLS does not index actual holdings or note field data in the holdings record. However, the format data held in that record are used for limiting searches.

Data important for retrieval, such as added entries which could be considered primarily for a specific version, are retained in the bibliographic record rather than the holdings record. This viewed as acceptable and, from a software perspective, certainly preferable to indexing added entry fields in the holdings record as well as the bibliographic record.

It would be possible to move some fields from bibliographic to holdings records, if the move would apply consistently to all occurrences of that USMARC field tag. It would not be acceptable to require that all versions which are currently represented by separate records be combined into a single hierarchical record approach.

For the purpose of importing and exporting records, it will be important to define which fields are valid in the bibliographic and holdings records or both. The software of individual systems can define whether the data will store and display as bibliographic or holdings data.

The ability of other systems to accept input of herarchical records would simplify output of USMARC records. However, it is also possible to output separate records from the local hierarchical records. This may be preferable, depending on whether the receiving system wants all versions, has made the same division of fields between the bibliographic and holdings records, and can handle duplicate detection when the master record of the hierarchical structure may not be the same.

This approach to multiple versions should be implemented as soon as possible. Combining it with changes for format integration are helpful only if that occurs soon; otherwise, it should proceed before format integration. Benefits for creating displays more appropriate for users of online catalogs are viewed as significant at the UW-Madison. Additional savings in processing of materials are also important, but not the primary benefit.

V

Possible Impact on Cataloging Rules

Helen Schmierer and Ben Tucker

The question of an impact on cataloging rules is really up to the bodies constituted for this purpose and ultimately they will provide the answer. In the meantime, the preliminary decision of the Forum was that the technique it has agreed on for multiple versions does not affect the cataloging rules. Indeed, looking at the cataloging rules in light of the technique, one notes an additional advantage for it, i.e., it provides an effective resolution of the controversy as to whether for reproductions the physical item should be described in the "base" fields of the catalog record (fields 2XX, 3XX, and 4XX) or described in a note in field 533 (Reproduction Note).

Under the Forum's proposal (see description of technique in section II), the bibliographic data in the separate holdings record created for a version will describe only the physical item in the cataloger's hands, not any original or other version, whether anterior or parallel. It might therefore be considered to be in accord with the emphasis of AACR 2 on the description of the physical item. This record for the version will of course be used only in connection with the record for the original and will be closely linked to that record, but the record for the version will remain a separate record, rather than have its data included as an integral part of the record for the original.

The main impact of the technique recommended by the Forum will be on the national policy for microreproductions, as stated in the Library of Congress Rule Interpretations for AACR 2, Chapter 11. This statement should be revised to reflect the technique recommended by the Forum, once it has been reviewed and discussed by the bodies constituted for that purpose.

Finally, the Forum tentatively decided that in case of preservation microreproductions the second level record for the version being handled under the technique should give elements of the bibliographic data pertinent to the version only, all bibliographic data pertinent to the original being found in the record for the original. This decision, as well as later decisions about the coding/tagging of bibliographic elements in the record for the version, does not appear to have any impact on cataloging rules. In fact, AACR 2 does not address "equivalent" versions. (N.B. Cataloging rules before AACR 2 contained provisions for "dashed-on" entries covering at least some of the versions that might be handled under the Forum technique, e.g., photoreproductions.)

VI

Possible Changes in the USMARC Formats

Stephen P. Davis and Sally McCallum

The selected two-tier model is highly compatible with the existing USMARC Format for Bibliographic Data and USMARC Format for Holdings Data. When the USMARC holdings format was drafted in the early 1980s, it was intended that at least microform version data could be placed in the holdings record and fields were provided for that information:

007 Physical Description Fixed Field
843 Reproduction Note

Several areas need exploration to determine whether changes are needed to better accommodate widespread use of the holdings format for equivalent version data. Some of the areas that need to be investigated are the following.

1. *Non-serial holdings data.* Currently, the USMARC holdings format only accommodates serial holdings comprehensively. Review of adjustments to incorporate non-serial holdings is underway in the USMARC advisory group, and it is essential that this review be completed.

2. *Break out of data elements.* Currently the USMARC holdings format provides one field, 843, for the imprint, collation, and series of the version represented by the holdings record. This reflects the approach that has been taken for versions when separate bibliographic records are made for the versions (bibliographic note field 533 is the same as holdings note field 843). In order to facilitate data modeling and give flexibility in the local and network environments, the data in the 843 subfields might be better recorded in the fields in which they would reside in the bibliographic record.

Holdings	Bibliographic	Data
843 ǂb, ǂc, ǂd	260	Imprint
843 ǂe	300	Collation
843 ǂf	4XX	Series Statement

   Related to this problem, the continued use of the 533 in bibliographic records would need to be considered.

3. *Additional bibliographic data elements.* There may be additional data elements needed in the USMARC holdings record to accommodate additional characteristics of an equivalent version that differ from the version described at the first level, especially as guidelines for the use of the technique with non-print materials are developed. Edition is one example of an additional element as statements such as "Microfilm Edition" or "Library Edition" sometimes appear an equivalent versions.

4. *Limitation on bibliographic data fields in holdings.* One question that needs to be considered is whether guidelines can be or need to be developed that would effectively limit the bibliographic data elements in the USMARC holdings record. For special consideration would be access points since there might be a preference for not placing formal access points in the holdings record. The series statement, however, is already included in the holdings record, thus series added entries are among data elements that need to be considered for possible inclusion in USMARC holdings format records.

5. *Linking numbers.* The USMARC holdings format provides for several ways to link holdings records to bibliographic records, but their use is not clearly delineated. Discussion of the linking mechanisms needs to take place.

6. *Bibliographic 008 data.* At present, the bibliographic 008 data for the version cannot be coded in the USMARC holdings record. (The USMARC holdings format has defined an 008 with data elements pertaining to holdings information.) The need for this coded data for the version should be discussed.

7. *Non-roman data.* At present, non-roman data cannot be carried in a USMARC holdings record. If bibliographic data for the version could be non-roman, adjustments need to be made.

VII

Implementation Strategy

Sally McCallum

The Forum identified the following topics for consideration of implementation strategy:

Concerned groups
Feasibility studies
Cost implications
Timing considerations
Interim actions

There was an immediate consensus that sharing information and attempting to coordinate implementations would be very important as we move to a communications environment that encompasses two-tier model records. The initial task will be to get the results of the conference out and assure an understanding of the selected technique. The primary information and advocacy group will be those who attended the Forum. Also, this report should be made widely available. It might be useful for workshops to be held to assure wider understanding of the USMARC Format for Holdings Data.

There was a recognition that today's records will not go away. There will be a need to accommodate coexistence of existing separate records with future two-tier records. Information on when the major record suppliers will be able to implement the holdings format will be important to all institutions with systems. Studies need to be undertaken on the ability to convert existing data elements into a standard two-tier model. While some of these data are currently standardized communications data, much of them are internal system-specific data.

1. *Concerned groups*. A number of groups will need to understand the decision and participate in implementation. Among the many that could be identified, the Forum participants named: CONSER, Automation Vendor Industry Advisory Committee (AVIAC), Medical Library Association, Music Library Association, Society of American Archivists, American Association of Law Libraries, RLG's BibTech, OCLC's Research Library Advisory Committee (RLAC), Online Audiovisual Catalogers (OLAC), ARL Bibliographic Control Committee, and various ALA groups such as Computer Files Discussion Group, Committee on Cataloging: Description and Access (CC:DA), Machine Readable Bibliographic Information Committee (MARBI), Reproduction of Library Materials Section (RLMS), and Preservation of Library Materials Section (PLMS).

2. *Feasibility studies*. As institutions engage in planning and feasibility studies, they should share these studies with others. The Library of Congress Network Development and MARC Standards Office should act as a clearinghouse for a list of studies that have been carried out.

   Participants thought that the import and export of two-tier records should be the initial focus of implementations.

3. *Cost implications*. The Forum participants agreed that costs will vary widely depending on current configurations, approaches chosen, and system environments.

4. *Timing*. The general opinion of the Forum participants was that as much coordination as possible would be essential to successful implementation. The group also recognized that every institution has priorities into which this development must be placed. It was recognized that another potentially major development, format integration, is already being studied for implementation.

   Two factors in the timing are the rapid finalization of the USMARC Format for Holdings Data and a thorough consideration of implications for the cataloging rules. Work should also begin in the groups concerned with non-print material on the formulation of guidelines for use of the two-tier model.

5. *Interim strategies*. In the short term several projects concerned with preservation microfilming are about to be undertaken. Forum participants recommended that these projects follow the existing Guidelines for Bibliographic Records for Preservation Microform Masters that have been worked out over the last few years by the Association of Research Libraries, but that these guidelines should be checked against the two-tier model to assure the possibility of convertability. The existing guidelines, which specify separate records, have encountered problems with positioning of the microfilm extent information for serials (i.e., information corresponding to that in the 362, Dates of Publication and/or Volume Designation, in the record for a printed serial), fixed field coding information, and system input standards. Solutions for these problems should be sought immediately, with consideration given to the convertability of the records to two-tier communication at a later date.

Appendix A
List of Participants

Kathleen Bales, Manager, Library Applications, Research Libraries Group, Inc.

Linda Bartley, CONSER Operations Coordinator, Serial Record Division, Library of Congress

Phyllis Bruns, Senior MARC Specialist, Network Development and MARC Standards Office, Library of Congress

Stephen P. Davis, Assistant Director for Library Systems, Columbia University (Chair, ALA MARBI Committee)

Howard Dillon, Director of Academic Information Services, Columbia University

Dale Flecker, Associate Director for Planning & Systems, Harvard University

Sylvia Frost, Head, Cataloging Department, Hesburgh Library, University of Notre Dame

Catherine Garland, Automated Operations Coordinator, Special Materials Cataloging Division, Library of Congress

Crystal Graham, Latin American Studies Cataloger, Central University Library, University of California, San Diego

Steve Hensen, Senior Program Consultant and Program Officer, Archives, Manuscripts, and Special Collections, Research Libraries Group, Inc.

Jeff Heynen, Chief of Special Materials Cataloging Division, Library of Congress

Betsy Humphreys, Deputy Associate Director for Library Operations, National Library of Medicine

Carol Mandel, Director, Technical Services, Columbia University Libraries

Ralph Manning, Senior Coordinator for Standards, National Library of Canada

Sally H. McCallum, Chief of Network Development and MARC Standards Office, Library of Congress

Gary McCone, Head of Database Administration Branch, National Agricultural Library

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Lucia Rather, Director for Cataloging, Collections Services, Library of Congress

Susan Rhee, Associate University Librarian, The Library, University of California at Berkeley

Carlen Ruschoff, Head, Cataloging Department, Georgetown University Library

Helen F. Schmierer, Library Systems/Planning Analyst, Brown University Library

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Sally Sinn, Deputy Chief, Technical Services Division, National Library of Medicine

Barbara Tillett, Head of Catalog Department, Central University Library, University of California, San Diego

Ben Tucker, Chief of Descriptive Cataloging Policy, Library of Congress

Verna Urbanski, Head, Copy Cataloging Section, Chief Media Cataloger, Carpenter Library, University of North Florida (Chair, ALA CC:DA)

Lisa Weber, Assistant Director for Technological Evaluation, Records Program, National Historical Publications and Records Commission

Linda West, Assistant Librarian for Technical Services, Cornell University Library

Martha Yee, Cataloging Supervisor, UCLA Film and Television Archive

Logistical Support:

Mia F. Smith, Senior Editorial and Publication Assistant, Network Development and MARC Standards Office, Library of Congress

Appendix B
Multiple Versions Forum Agenda

Location: Airlie House, Airlie, Virginia
Dates: December 6-8, 1989

Facilitator for the Forum: Howard Dillon

I. Framework Session [Moderator: Verna Urbanski]
- Introduction, general description of reason for forum, how the proceedings are to be organized. [Sally McCallum, Lucia Rather, and Howard Dillon]
- Definition and Scope of "Multiple Versions" [Crystal Graham]
- Internal local vs. Internal network vs. Communications environments [Glenn Patton]

II. Composite Approach [Moderator: Sally McCallum]
- General and detailed description of techniques in USMARC terms [Helen Schmierer]
- Pro argument [Steve Hensen]
- Con argument [Martha Yee]

III. Hierarchical Approach [Moderator: Jeff Heynen]
- General and detailed description of techniques in USMARC terms [Barbara Tillett]
- Pro argument [Betsy Humphreys]
- Con argument [Stephen Davis]

IV. Separate Approach [Moderator: Ben Tucker]
- General and detailed description of techniques in USMARC terms [Kathleen Bales]
- Pro argument [Ralph Manning]
- Con argument [Dale Flecker]

V. Subgroup Sessions
- Two-tier model [Reporter: A.R. Pierce and Betsy Humphreys]
- Three-tier model [Reporter: Carol Mandel]
- Separate record model [Reporter: Stephen Davis]

VI. Wrap-up Session [Moderator: Verna Urbanski]
- consensus on technique
- breadth of applicability
- statement of benefits
- statement of effect on current systems
- statement of possible changes in formats and rules

Appendix C
Composite Record Technique

Sally McCallum

Description of Models

Two generic models for composite records were discussed:

- Classic subrecord - fields belonging to subrecords are approachable via a directory (e.g., the 002 (Subrecord Map of Directory)) and full information may be included in the subrecord.

- Non-classic subrecord - fields belonging to subrecords are linked through subfields (e.g., ǂ3), tags, notes, etc.

Evaluation

Composite records have advantages in some situations, e.g., for end-user displays, and uniformity of access points. They also have disadvantages including difficulty in linking holdings to proper subrecords and length of records. Forum participants had difficulty visualizing the management of the exchange and replacement of records as subrecords were added or subtracted.

In this discussion, some archival materials that do not fit under the multiple versions rubric as defined, were nonetheless mentioned because the composite record technique is particularly useful as a technique in dealing with them. Two examples of archival materials that are being treated in a collective manner are listed below:

- archival moving images in which a group of films, some complete and others perhaps partial, are cataloged as one bibliographic entity on a composite record, (see, e.g., Archival Moving Image Materials, A Catloging Manual),

- archival material consisting of, e.g., a mixture of both originals and reproductions, 10 boxes of which 1-3 are microfilm (originals lost), 4-6 are in microfilm and original, and 7-10 are original.

In these cases a non-classic subrecord technique is used. Fields pertaining to one subset of the material are linked with subfield ǂ3 (Materials specified).

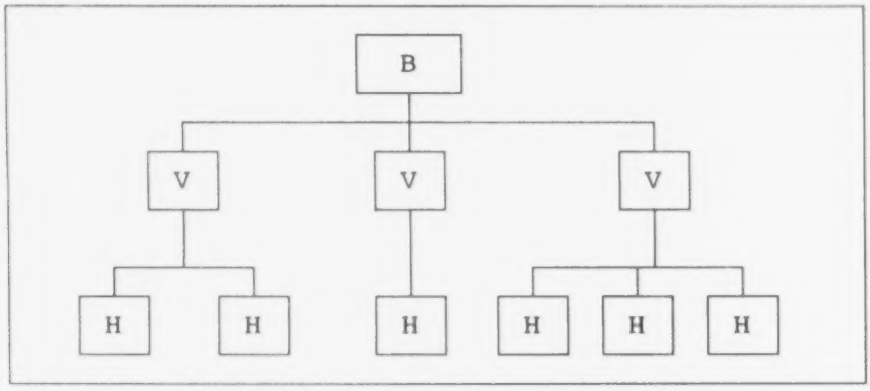
The examples above are considered to be treated as collections, not as equivalent multiple versions.

Appendix D
Report of Subgroup on Three-Tier Hierarchical Model

Carol Mandel and Barbara Tillett

Description of Model

A hierarchical structure for records is a set of non-redundant, related records in a tree-structure (or root and branch). This hierarchical structure follows the rule of attaching each record to no more than one higher record in a tree. The three-tier level hierarchical model considered is shown below. In that figure, B is a basic bibliographic record (bibliographic entity), V is a version record (physical manifestation), and H is a local holdings record (copy).



This structure would allow non-redundant bibliographic description and access points for a version through the use of the hierarchically subordinate subrecord.

Multiple versions often have unique bibliographic description, such as imprint and physical description, and require their own added access points, such as control numbers and series. In the case of exact reproduction, they also typically share basic bibliographic description and access with the record for the master item of which they are a reproduction.

Summary

The subgroup found this model quite appealing on a theoretical level. It uses three tiers to express what is essentially a three-level concept: generic work, version information, and "pure" holdings. However, since it introduces an entirely new approach to bibliographic records and adds an additional layer of complexity to record handling, the subgroup found the option far less appealing when measured against pragmatic criteria. The subgroup did not recommend the option as an effective means of addressing multiple versions in the context of existing environments.

Evaluation

1. Potential for Effective End User Access

The option possesses all of the requisite data elements, definitions, and linking mechanisms to allow the potential of effective end user access. However, this is only its POTENTIAL; major work on system design and displays would be necessary before end-user access could take advantage of the information provided.

2. Potential for Effective Library Staff Use and for Various Functions

The option possesses the requisite data elements to be used by library staff in a variety of ways, e.g. for acquisitions records, check-in records, etc. Because the generic portion of the record would not by itself be useful for various functions, it adds some complexity to the training, system design, procedures, etc. that would be needed to manipulate it. (For example, the generic record could not be used alone to create most functional records, such as acquisitions orders, but would have to be combined with a version record.) A national standard would need to be developed describing/defining the elements of a generic record so that staff training and use of the records would be consistent.

3. Potential for Effective Use in Various Environments

The option is not tailored to any one environment. In fact, there is no current environment (known to the subgroup) that could accept without major changes the three-tier format. Thus, its POTENTIAL use in a variety of environments is great, but only with major system changes in all environments.

4. Potential for Use for Different Material Types

This option can be used for reproductions of any material type. Its application becomes complex and less feasible for different kinds of bibliographic relationships.

5. Implications for Efficient Creation and Maintenance of Records

This option has the potential for efficient creation of records (both original and copy cataloging), but only with significant system development at both utilities and local systems to pull together elements of the generic and version layers in efficient searches and easy-to-use displays. There would be a considerable training and learning curve, and, as noted in criterion 2, national standards would be needed.

Implementation of this option would pose significant problems for record maintenance. Three tiers of records would have to be maintained (along with their links) at the utility and local level, expanding geometrically the amount of programming, record-keeping, matching, deduping, etc., that would have to be done as records are transferred back and forth between utilities and local systems. Since generic records do not stand alone, records would have to be constantly reassembled in order to be communicated and maintained. Both the generic records and version records would require matching programs in order to load them. While there is some savings in headings maintenance by using generic records, this savings would apply only in systems lacking global change capability. Implementation of global change seems a much more cost effective way to gain this advantage.

6. Cost Effectiveness of the Total System and for the Component Parts of the System for Creating, Providing, and Presenting Data

This option cannot be supported as cost-effective. By adding a third layer of records for all systems to handle, both first-time and ongoing costs of managing the new record format would be great. Its implementation would require enormous amounts of system change in all components. Development work would be required for displays, load programs, handling linking numbers, etc. Even after the initial huge investments in development were made, ongoing costs for the added layer of machine manipulation of records (matching, linking, etc.) would be considerable. The costs to implement this option are entirely out of proportion to any potential benefits it offers.

7. Feasibility for Implementation in the Context of Existing Databases

This option proposes a format which is incompatible with existing databases. In order for records to co-exist, it would be necessary to match new generic and version records with existing "whole" records and undertake considerable editing of each record. The alternative would be duplication of records, i.e. older "whole" records for some versions, and new three-layer records for the same and other versions. The subgroup tried to think of acceptable and feasible strategies for merging old and new records, but none were obvious. Implementation of this option might force consideration of "closing" databases just as pre-AACR 2 card catalogs were closed.

8. Extent to which Records are Self-defining (Stand-alone)

Records created under this model would not be independent. The version records would not stand alone.

Appendix E
Report of Subgroup on Separate Record Model

Stephen P. Davis

Description of Model

In the separate record model, a complete bibliographic record is made for each version of an item, with links created among the records.

Evaluation

(Rated by the subgroup on a scale of 1 (poor) to 5 (good))

1. Potential for Effective End User Access (3)

Although the data "hooks" for effective manipulation and display of version data would indeed be built into the separate records, the burden would fall on local systems to make a commitment to use these hooks to modify display and retrieval software to improve end-user access. If conscientiously carried out, there might well be substantial software development required. This approach would probably result in retrieval and display methods varying greatly from one system to another.

2./4. Potential for Effective Use for Acquisitions, Copy Cataloging (4)

The separate record approach would be as effective for acquisitions and copy cataloging as the status quo in terms of the existence of shared cataloging records that could be used with little modification by other institutions to support these functions. (The hierarchical approach on the other hand, would mean that there would often not be an exact match in a shared cataloging database for the item held locally--more true for acquisitions than cataloging).

To the extent that database searching is part of the acquisitions and cataloging operation, the separate record solution for versions would be as unwieldly as the current situation, with many candidate version records to examine in order to locate the exactly matching record.

3. Potential for Effective Use in Various Environments (1)

The subgroup was persuaded that, although the separate record approach provides a great deal of flexibility, the prospect of having system-specific links among records would lead to great confusion and ambiguity in inter-system record transfer. It would be difficult to interpret other systems' linkages. It would be complicated to import a version record into one's own system without importing all linked records, some of which might be for items not held. When sending records to other systems it would be difficult or impossible to send appropriate link information relating to the target system.

5. Potential for Use for Different Material Types

Could be used for all forms of material.

6. Implications for Efficient Creation and Maintenance of Records (1)

Holdings would continue to be difficult to maintain in a separate record scenario, with related holdings split among many different bibliographic records.

The separate record technique increases general bibliographic record maintenance as it results in many mostly redundant version records with identical headings needing to be authority controlled. It would also require both manual and sofware support for creating and maintaining complicated, dynamic sets of links between records.

7. Cost-effectiveness Over the Total System and for the Component Parts of the System for Creating, Providing, and Presenting Data

It is difficult to assess cost-effectiveness of this approach. While it might require a great deal of software support and retain inefficient manual record maintenance, it would not require that institutions implement the USMARC holdings format or reorganize their database structure.

8. Feasibility of Implementation in Existing Databases (5)

The separate record approach could be implemented readily in a "minimal implementation" (i.e., possibly without desirable user interface modifications, and with manual link creation). It would not require large scale file conversion or editing of records, or major rethinking of principles of cataloging or database organization.

9. Extent to which Records are Self-defining (Stand-alone) (5)

The separate record approach has the advantage of resulting in complete, self-defining MARC records carrying all relevant bibliographic data in the bibliographic record itself (where the hierarchical approach moves some bibliographic data down into holdings records). This approach would fit into existing record distribution patterns, though with the additional complication of creating and maintaining logical record links.